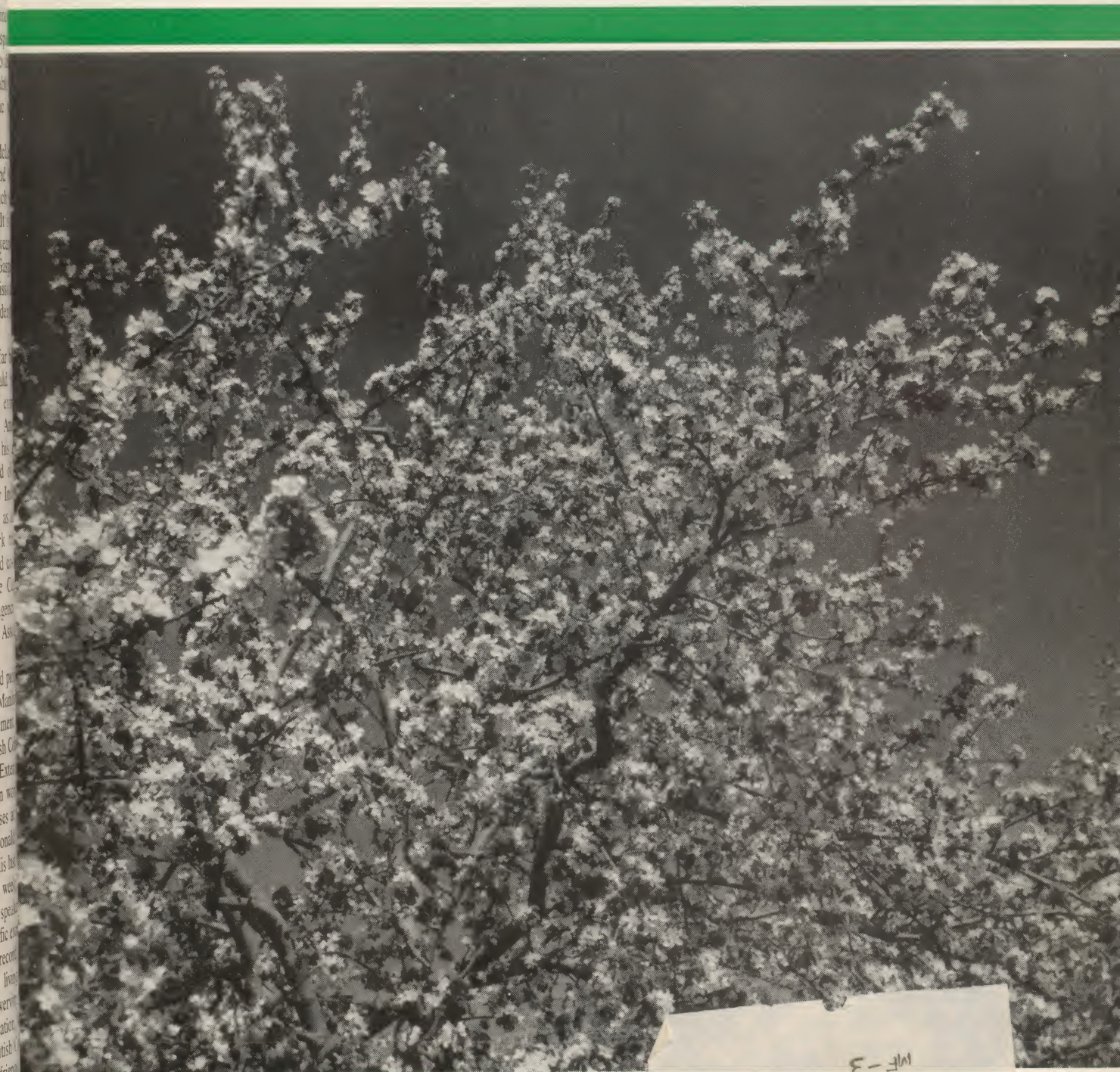


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COVER: Apple trees in bloom in a Quebec orchard

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LIME AND WOOD ASHES



INSIDE

THE EDITOR'S COLUMN

My father farmed one generation too soon. If today's know-how had been available to him in the 1920's I am sure our little farm on the light soils of the Laurentian Shield would have been one of the greenest spots on the face of the earth.

I read again his farm journal the other day, a five-cent Excelsior Exercise Book with the arithmetic tables on the back, now yellow with age and a bit tattered, a stirring document of hope and failure and sometimes success, a record of one man's struggle with a reluctant soil without the tools we have today. The word "innovator" hadn't been invented then, but there is no doubt he was one. In the 1920's, his ideas too seldom worked. In the 1960's, I am sure most would have. He looked for answers for his questions, but the answers were not ready yet. On the first pages of his journal, he set down fifteen guide-posts. Around them, he built his farm plan. Against the background of what we know today, they make a thoughtful study.

He resolved, for example, at the time alfalfa was an exciting new crop, "to try out alfalfa thoroughly; plant a small patch with lime and wood ashes". Opposite the sketch of his trial plots he enters a failure: "Alfalfa never grew or caught." But he didn't know then how close he was to success. The lime had corrected the soil acidity—he tested it with red and blue litmus paper—and the wood ashes supplied the potash. But it took a soil test thirty years later to reveal the critical lack of phosphorous to support young seedlings. Today, alfalfa flourishes in that field.

My father seems to have had a great deal of trouble with new seedings, as several resolutions reflect. We know today that the thin podzol soils were simply too low in natural fertility; commercial fertilizers were still a curiosity. But my father tried everything to get a catch; he planned "to use the roller extensively, especially on sod, to encourage capillary action", and "to get a set of very light lever harrows to finish the seed bed and to follow after the roller". I can still remember that roller; he built it from a giant elm log and a seat from a mowing machine.

He tried to get a catch by direct seeding without a nurse crop—an idea still new today. He wrote "won't work" across that one; he didn't have today's chemicals to keep the weeds under control.

Resolution number ten is a curious one. My father wrote, "Do not pasture the hay fields on any account as it robs the soil of humus, leaving nothing to plough down." Had the year been 1967, I am sure he would have written, "Resolved to set one hay field aside every year for intensive pasture, strip grazing and fertilizing as often as a soil test indicates it is needed to maintain the stand and the soil organic matter and plough only if legumes are accidentally lost." In 1923, you couldn't go to the telephone and order a load of bulk fertilizer.

In 1967 dairymen are still looking for some way to grow their own protein supplement. Some are using soybeans. My father tried peas. "Resolved to buy less millfeeds and to keep only what stock can be fed properly off the farm, and to grow peas to supply the protein, instead of buying oilcake and cottonseed meal." It was the pea-weevil that brought an end to that venture. Insecticides were not yet on the market.

Corn was a sad story on our farm. Co-operatively, my father and his neighbours put up wooden silos and bought complete corn equipment. I can still recall the flavour of the ears of corn roasted in the firebox of the steam engine that ran the silo filler. The first crops of corn were wonderful. His gamble had paid off. The second time around the farm, yields were not so good, and he couldn't get a catch afterwards. Finally, the silo stood empty, and corn got the blame for ruining the farm. But it failed only because he was ahead of his time. Our light sandy loam soil, today considered top corn land, just could not supply that hungry crop without artificial help.

My father tried just about every new idea that came along. He tried soybeans, but the season was too short. He grew flax for linseed for the calves (he boiled it to a jelly). He tried sunflowers to take the place of corn. He tried seed potatoes "to compete at the Royal and get the gold watch".

His journal records his failures and his successes. He concludes Resolution XV, "A man is as well off farming here as elsewhere, when fuel, plagues and pests are considered." And that in a time when labour was valued at 40¢ an hour, for a man and his team.

Walker Riley

ERROR IN MARCH ISSUE

An error crept into the table showing maximum rates of various herbicides on legume seedings. The chemical in the third column should be 2,4-DB, not 2,4-D as shown.

Please correct any copies in your possession, as these rates of 2,4-D could result in serious crop damage. The corrected table is reproduced below.

Legume	2,4-D amine salt oz/ acre	MCPA sodium or amine salt oz/ acre	2,4-DB ester oz/ acre	MCPB sodium salt oz/ acre
Alfalfa (Vernal type)	4	6	20	—
Alfalfa (DuPuits type)	0	0	20	—
Red Clover or alsike	4	6	20	24
Birdsfoot trefoil	6	4	20	—
Sweet Clover	0	0	0	0

FIELD CROPS FOR QUEBEC—PART TWO

Grain and Silage Corn—Annual Forage Crops—Oil Seed Crops for Quebec.

In the March issue, the staff of the Agronomy Department and the Soils Department of Macdonald College combined forces to produce Part One of Field Crops for Quebec. Hay and Pasture crops, and Cereal crops were covered. This issue continues with Corn, Annual Forages, and Oil-seed crops.



GRAIN AND SILAGE CORN

Adaption, varietal recommendations, cultural practices, weed control and fertilizers for top yield and maximum crop value.

CORN is the highest yielding cereal and one of the highest yielding of all crops. It is grown throughout the world where enough warmth and rainfall occur for this large grass to thrive. Corn grows vigorously in many parts of Quebec and it has been harvested for silage in southern Quebec for many years. Newer hybrids are now making it possible to grow corn for grain in southwestern Quebec with the consequence that grain corn is becoming an important farm crop here.

To understand why new hybrids have made grain corn production possible in Quebec when in the past it was assumed that corn would not ripen in Quebec, it is necessary to understand something about the development of the corn plant and how the growth of the plant is related to climate. It is usual to describe corn as a warm-temperature grass and to imply that the reason we have difficulty in maturing corn in Quebec is because we do not have enough heat. But scientists have known that the Canadian Indians grew corn and that there were varieties which would mature seed here. When these corns were studied it was found that they were smaller and had fewer leaves than corn from the "Corn Belt". Here was the clue to success in breeding high yielding grain corn for Quebec. We do not have enough heat to grow 18 to 20 leaves before the plant must come into flower at the end of July and thus have enough time for the ear to mature before frost, but we do have enough heat to grow 12 to 14 leaves. The number of leaves is inherited and the amount of heat required to grow a certain number of leaves

has been determined, allowing the breeder to "design" the proper corn plant for any particular heat zone. With this knowledge new hybrids have been produced by the same techniques which were so successful in producing high yielding corn for the Central United States, but which are adapted to southwestern Quebec. These hybrids generally are smaller than the corn adapted to southwestern Ontario and the United States, and the ears may be smaller and less "showy". By taking advantage of their smaller size and growing more per acre, outstanding returns of animal food per acre may be expected.

Soils For Corn

Corn will grow and do well on almost any soil providing it is well fertilized and well drained. Usually the best soils for corn are deep, moisture retentive, friable well drained loam. In many parts of Zone One where grain corn could be grown the soils are slow to drain in the spring and planting is delayed resulting in a shorter growing season and poorer maturity of the grain. Tile drainage is recommended to improve the soil for grain corn production throughout the St. Lawrence lowlands.

Heat For Growth

It is often said that we need an "early" corn for grain production in Quebec — a 75- to 80-day corn — rather than a "later" 100-day corn. The words *early* and *late* are only relative to the area and a corn which is early in southwestern Ontario would be late in southwestern Quebec. Similarly, the number of days required to

mature corn will vary with the amount of heat required for a particular hybrid. The system of describing the maturity of corn in "days" was developed in Minnesota and Wisconsin and in these areas an 80-day corn does mature in eighty days. But that same corn will barely mature at Macdonald College in the 130 frost-free days between planting in early May and frost in September, while in the Netherlands the same hybrids will require the full 180 days of the growing season. The "day" system is useful in describing the relative maturity of different hybrids for an 80-day corn which is everywhere earlier than a 100-day corn. But the exact number of days is rarely reliable in describing the actual requirements of a hybrid.

To replace these methods of describing corn maturity, a system of totalling heat has come into use. "Corn Development Units", or just plain "heat units" are arbitrary values used to describe the amount of heat received in a certain region and the amount of heat required for a particular corn hybrid to mature. They are calculated on the basis of temperatures above 50° F. in daytime and 40° F. at night. The heat unit value is the sum of heat received between the date of occurrence of an average mean temperature of 55° F. in the spring and the autumn date when killing frost can be expected one year in ten. Maps of most parts of Canada are available showing the number of heat units usually received in any given region and the various hybrids are also described in terms of the number of heat units required for maturity. Zone One on the map of

Agricultural Zones of Quebec corresponds to the area in which 2600 or more heat units are usually received. Fewer heat units are received in the other Zones. The earliest hybrids now available required about 2500-2600 heat units to mature ripe grain, so grain corn production is only recommended in Zone One.

Outside of Zone One the corn plant may grow well but the ear will not usually mature and the crop is only satisfactory for silage. In fact, in the cooler parts of the province the plants may actually grow much larger than in Zone One and the total yield of dry matter in the fodder may be higher than that of corn grown in Zone One, but little of the total yield will consist of grain.

The object in growing grain corn should be to achieve full maturity of the grain before frost kills the plants. As the grain develops in the late summer the amount of water in the ear falls. Studies have shown that the full weight of kernels is reached when the moisture has dropped to about 38%—that is, the grain is physiologically mature. Even if frost does not come at this point the ears will not gain further in weight. Much further drying is required either in the field before harvest or in dryers before the corn may be stored safely or sold, but this loss of moisture will still leave full, plump grain of high nutritional value. Corn which is frosted when the moisture percentage in the grain is in the 40-55 per cent range will shrink considerably and be lower in grade. Thus the cultural practices adopted should all be aimed at having the corn physiologically mature by frost.

In Zone One, the calculation of the 2600 heat units begins early in May. If a hybrid which requires 2600 heat units is to be grown there it must be planted as near to May 1st as is consistent with good seed bed preparation; otherwise it will not have enough heat to mature. Experiments conducted by Macdonald College at Ormstown, St. Hyacinthe and L'Assomption during the past two years have shown that any delay in planting after the first week in May results in lower yield and a higher moisture in the grain at harvest. Furthermore, the earlier that corn is planted the shorter and sturdier it grows and the more resistant it is to lodging from summer storms.

Contrary to popular belief, the new early corn hybrids can withstand spring frosts. While the leaves above the ground may be "burnt off" with frost the growing point of the corn seedling stays below the ground for some time and the plant quickly sends up new leaves. Only a hard freeze of the soil or

a prolonged wet period is likely to kill the corn seedling. However, these risks are common to many alternative crops also.

Varieties For Quebec

The Corn Committee of the Quebec Seed Board grows the new corn hybrids at five or more locations in the province as they are introduced by the various hybrid corn companies. The following hybrids have done well in these trials and are recommended for planting for the production of ripe grain corn in Zone One.

Heat Unit Rating	Hybrid	Heat Unit Rating	Hybrid
2500	Haapala H-175	2800	P.A.G. 26
	Morden 88		United Hagie 10
	Trojan F-75		Jacques 853J
	Warwick SL209		
	Pride 116	2900	DeKalb 56
2600	DeKalb 29		Pioneer 388
	Pride 4		Kingscross K.C. 6
	Funk's G-2A		Funk's G-36
	United Hagie 108	3000	
	Warwick 261		Algonquin
2700	Pioneer 3891		Warwick 401
	Seneca XX155		Pride 20
	United Hagie 7		
	Pride R100		P.A.G. 55
			Funk's G-17A
		3100	
		3200	Kingscross
			K.E. 497
			Warwick 605

The list is arranged in order of maturity, i.e. Haapala H-175 is more than one week earlier than Warwick 263. Note that company name and number are both needed to identify a particular hybrid.

The later hybrids on this list and other later hybrids which may be offered for sale will yield more than the earlier hybrids. But except in the most favourable years or areas, these late hybrids will not reach physiological maturity and the quality of the grain will be poorer, drying costs and moisture discounts will be higher. As corn farmers in Quebec become more sophisticated it is hoped they will aim for quality instead of just quantity by planting only hybrids which will reach full maturity.

The best silage in Zones 1 and 2 is made from a grain corn variety which has nearly reached maturity. One of the later hybrids on the preceding list is recommended. The feed value of silage is increased as the proportion of grain increases and so the ideal time to make silage is just before frost after the grain is physiologically mature and well dented.

In Zones 3, 4 and 5 even the earliest grain corn hybrids do not develop much grain before frost. Trials by the Corn Committee of the Quebec Seed Board

have shown that in these areas the highest yield of dry matter comes from a large growing, higher heat unit requiring hybrid. The early hybrids will neither mature an ear nor, having fewer leaves, grow big enough to produce a high yield in these regions and so they have nothing to recommend them. On the other hand, the silage made from the later hybrids will be high in moisture which will increase handling costs, and result in unpleasant drainage from the silo. Such silage is not as high in energy as silage containing grain and it may be difficult to get enough of it into beef animals for profitable gains. The following hybrids have shown a high production of dry matter in the cooler parts of Quebec and are recommended for silage where the grain corns in the first list will not mature:

Heat Unit Rating	Hybrid
2800	P.A.G. 26
	United Hagie 10
	Jacques 853J
2900	DeKalb 56
	Pioneer 388
	Kingscross K.C. 6
	Funk's G-36
3000	Algonquin
	Warwick 401
	Pride 20
3100	P.A.G. 55
	Funk's G-17A
3200	Kingscross
	K.E. 497
	Warwick 605

"High sugar" corn

Some mention has been made in the popular press of "high sugar" corn for silage which never develops grain on the ear. H.S.-50, the only readily available hybrid of this type, is a 3500-heat-units hybrid which develops into a very large plant. The total dry matter production per acre will likely be sufficiently high to give a TDN yield nearly comparable to that produced by a well eared, but smaller, grain corn. But the silage will be very high in moisture it may be difficult to get beef animals to eat enough to provide the energy requirements for rapid gains. Milk production with silage made from this hybrid, as with other late hybrids, may be nearly equal to that produced by high grain content silage when compared on the basis of the amount of dry matter consumed.

Plant population

A growing crop is the only method of trapping energy coming from the sun and converting it into food. Any sunlight which passes through to the soil is wasted. The ideal cropping program, then, is to have the surface of

the soil completely covered with leaves for as long in the season as possible. Corn rows 40 or 42 inches wide are fine to allow a horse to pass, but they are unnecessary with modern machinery and they are unproductive. Choose as narrow a row for both grain and silage corn as your equipment will handle, but be sure to look ahead to harvest time and make sure that your corn picker, combine or forage chopper can be adjusted to the row width of your corn planter.

Studies conducted by Macdonald College the past two years at L'Assomption, Ormstown and St. Hyacinthe in which 2600 heat unit hybrids were planted in four row widths, 42, 36, 30 and 24 inches showed that the same number of plants per acre yielded more grain when arranged in 24 and 30 inch rows than in 36 or 42 inch spacings. Furthermore, when corn is planted in narrower rows it is possible to have higher total plant populations per acre without the plants crowding each other in the rows. These studies have shown that populations below 20,000 plants per acre are wasteful in capturing the energy from the sun. Specifically, these studies showed that a population of 26,000 to 29,000 plants per acre gave the highest grain yield in either 24 or 30 inch rows. Note that it is necessary to adjust the fertility level upward as the plant population increases to receive maximum returns. Table C indicates the spacing required to achieve different populations with drilled corn:

Table C **Planting Rates of Drilled Corn**

Expected plants per acre at harvest	Seed required per acre (assume an 85% stand at harvest)	Row width in inches					
		20	24	28	30	32	36
18,000	21,200	Ave. 14.7	12.3	10.5	10.1	9.2	8.2
20,000	23,500	13.3	11.1	9.5	8.8	8.3	7.4
22,000	25,900	12.1	10.0	8.6	8.0	7.5	6.7
24,000	27,600	11.3	9.4	8.1	7.5	7.1	6.3
26,000	29,900	10.4	8.7	7.4	6.9	6.5	5.8
28,000	32,200	9.7	8.1	6.9	6.4	6.0	5.4
30,000	34,500	9.0	7.5	6.4	6.0	5.7	5.0

In one bushel of seed, depending on the size classification, i.e., medium flats, large flats medium rounds, large rounds, there will be between 65,000 to 85,000 kernels.

The only sure method of proper plant spacing is to use a corn planter with the correct seed plate for the seed size you purchase. Seed size does not ordinarily affect yield so that you can buy the size or grade which is lowest priced, provided you also secure the corresponding planter plate. After the

seed and the proper plates are in hand, run the planter over a hard piece of ground or pavement where the seed can be observed for accuracy in the spacing. Drive the planter at the speed that will be used in the field. Planters should not be run at speeds more than three miles an hour since faster speeds cause misses in the seed drop and gross errors in the subsequent stand of corn.

Corn which is to be cut for silage may be planted at even higher populations than that recommended for grain. However, maturity will be delayed at the high populations, just as with grain corn, and resulting silage will be higher in moisture and lower in grain content. It would seem that the optimum population for silage with a 2600-grain corn in Zones One and Two would be in the low thirty thousands. With the larger, higher-heat-unit hybrids in the other zones a somewhat lower population would allow for full plant development.

Corn is a high-value crop capable of returning a large profit per acre on your investment. Therefore do not be afraid to invest time and money in the first place. Make sure the land you choose for corn is well drained, well prepared and fertile. Apply adequate fertilizer. Plant early; plant a recommended hybrid carefully with the correct planting plates; aim for 25,000 or more plants per acre; control the weeds; harvest carefully and store wisely.

Fertility for Corn.

Corn is a heavy feeder. A 25-ton silage corn crop will remove 240 lbs. nitrogen, 88 lbs. phosphorous (P_2O_5) and 80 lbs. potash (K_2O) from the soil. The soil can provide only part of this requirement; sandy soils will require more potash; low organic matter soils, more nitrogen and phosphorous. From the fertility point of view corn can be grown as a continuous crop if sufficient fertilizer is used.

BROADCAST. High corn yields demand more fertilizer than time or safety will

allow to be used at seeding. Most of the potash and phosphorous may be ploughed down in the fall. Most of the nitrogen can be applied preplant in the spring—ploughed down, injected, or worked in.

BANDING. Nitrogen and phosphorous are required for early growth. Therefore a portion of the fertilizer requirement should be banded near the seed—two inches to one side and two inches below. Do not exceed 500 lbs. of 5-20-20, or its equivalent, or 250 lbs. if an older (split-boot) type of planter is used.

"POP-UP" FERTILIZERS. Small amounts (for example, 50 lbs. 11-48-0) of low-salt fertilizers with the corn seed have given faster starts, occasionally increased yield, and earlier maturity, but because of the risk of "burning" the seed, this practice should be left to experienced corn growers.

SIDE-DRESSING. Part of the nitrogen requirement may be applied in the soil between the rows when the corn is 12" high to meet the high demand for nitrogen at tasseling time. However, unless equipment is available, preplanting nitrogen is economically satisfactory.

MINOR ELEMENTS — Deficiencies of minor elements have very rarely been observed on corn in Quebec.

FOLIAR SPRAYS — Applications of N.P. & K. as foliar sprays do not provide these elements in sufficient quantities to affect yields.

LIME — to a pH level of 6.5 for corn.

MANURE — No crop makes better use of farm-yard manure than corn. A legume sod ploughed down with manure can supply most of the nitrogen needed by the crop.

FERTILIZER RATES. — Soil testing is recommended for growers who want precise information on kinds and amounts of fertilizers. However the fertilizer rates given in the report must still be adjusted for top yields in individual situations. For instance, potential corn yields may vary from 75 up to 150 or more bushels per acre, depending on climate and on the properties of your soils (Table 1). Deep friable flat soils should be able to produce 150 bushels of corn per acre. Shallower sloping soils, or compact soils may be able to produce only 75 bushels. Thus fertilizer needs will vary depending on your soil's properties.

Based on the four soil capabilities in Table 1, fertilizer needs for various crop yields are shown in Table 2. Nitrogen needs must be adjusted for previous crops. This table shows you may have to increase nitrogen if your soils have a higher than average yield potential.

Table 1. Factors determining Soil Potential

	i	ii	iii	iv
Structure :	friable porous			compact
Drainage :	moderate	imperfect or good	imperfect	imperfect poor excessive
Depth :	36" +	36" +	20-36"	10-20"
Topography :	flat	2.5% slope	2.5-5% slope	6-9% + slope

Corn

Table 2. Fertilizer needs at four yield levels

	Yield (bushel/acre)			
	150	125	100	75
Preceding Crop	lbs. N/acre			
Legumes	140	100	60	20
Grass	200	160	120	40
Silage Corn	230	190	150	110
Analysis	lbs. P ₂ O ₅ /acre			
Poor	300*	200*	150	70
Medium	175*	100	40	15
Rich	85	15	15	15
Analysis	lbs. K ₂ O/acre			
Poor	360*	200*	140	80
Medium	160*	100	30	30
Rich	60	40	30	30

* High-yields on "Poor" soils not feasible in one year.

Phosphorous needs can vary from 15 to 300 lbs., depending on soil test ratings and potential yields. Potassium rates range from 30 to 360, again depending on the soil test rating and soil yield potentials. However, highest yields are not feasible if soil test levels are poor. For example the 300 lbs. of P₂O₅ and 360 lbs. of K₂O needed for a 150 bushel corn yield probably is not economical. Therefore reduce your yield expectations to 125 bushels or less and apply the more feasible rates of 200 lbs. of P₂O₅ and K₂O. Better still, gradually build up soil test ratings over the years, until top yields are within your grasp.

However, don't try to get a 150-bushel crop out of 75 bushel land. It can't be done with fertilizers alone.

Weed Control in Field Corn

There are several choices to make in controlling weeds in corn. They depend on the weeds present, the equipment available to apply the chemical, and the crops to follow. Treatments can be made as preplanting, pre-emergence or directed post-emergence; still further split, band or over-all application is possible.

Preplanting treatment. Where quackgrass or nutsedge is present in any abundance, good results have been realized from the following:

Atrazine 2 plus 2 lbs/A in 15-30 gallons water or amitrole-T 2 lb/A +

atrazine 2 lb/A in 15-30 gallons water.

If corn is following corn, the split application of atrazine is the better. If some other crop is to follow corn, use the split with amitrole-T.

The split application of atrazine may be done in any of three ways: 1, a fall application in September or October to be followed by either a pre-emergence or post-emergence application on the corn crop in the spring; 2, an early application in the spring after quackgrass starts to grow, followed by either a pre-emergence or post-emergence spraying; 3, a pre-plant incorporated treatment followed by a post-emergence application. Ploughing is satisfactory after application in 1 or 2, but not necessary from the standpoint of weed control.

Nutsedge requires a little more care in that 2 lbs. of atrazine should be worked into the soil with the last disking and the second 2 lbs. put on early post-emergence when the nutsedge is in the spike stage. To get good control cultivation may be required.

Pre-emergence treatment. Most germinating weeds, both grasses and broadleaf, will be controlled by any of the treatments listed below:

Pre-emergence treatment

Atrazine 1-2 lb in 15-30 gal/A water
Simazine 1-2 lb in 15-30 gal/A water
Linuron 1-2 lb in 15-30 gal/A water
Atrazine 1 lb.

+ Linuron 1 lb. in 15-30 gal/A water

Much higher rates than those recommended will not injure corn. Dry weather reduces the efficiency of atrazine and simazine, but atrazine, being the more soluble of the two, does a better job in dry conditions. All pre-emergence treatment may give better control of weeds under dry conditions when light incorporation with a smoothing harrow or rotary hoe follows application.

Atrazine and simazine are quite persistent chemicals and residual damage to crops grown on land treated with 2 lb/A has resulted. When sugar beets, oats, white beans or tomatoes follow corn the low rate is recommended. Be sure to get uniform coverage.

Linuron gives good pre-emergence weed control on corn. There is no residual problem on following crops, but corn may be injured on light soils, in which cases the low rate should be used. Quackgrass will not be controlled.

To reap the benefits of atrazine and to reduce the residual risk the mixture of 1 lb. of atrazine and 1 lb. of linuron has worked very well.

Atrazine may be sprayed in a band a foot wide over the row, then the concentration of the chemical is reduced in the soil, residual hazards are also reduced. Cultivation (between the rows) will be necessary to control weeds.

Post-emergence treatment

2,4-D amine 4-8 oz. acid per acre in 5-15 gal water

MPCA amine 4-8 oz. acid per acre in 5-15 gal water

MCPB or 2,4-DB at 16-20 oz per acre in 15-20 gal water

Atrazine 1-2 lb acre in 15-30 gal water

Atrazine 1-2 lb acre in 15-30 gal water and 1-1/2 gal oil

To effectively control susceptible broadleaf weed species such as ragweed, pigweed, lamb's quarter and mustard either 2,4-D or MCPA can be used as an over-all spray up to the time the corn is six inches high (leaf outstretched). After this stage, drop nozzles should be used to direct the spray toward the base of the plant. Drop nozzles are advised to reduce the risk of damage regardless of stage of growth.

Canada thistle, perennial sow thistle and field bindweed are more susceptible to MCPB or 2, 4-D and the use of drop nozzles is imperative. Do not use an overall spray. Annual grasses are not controlled by these chemicals.

2,4-D and MCPA will kill only the weeds which they contact. There is no residual effect. For further weed control cultivation may be necessary

and can be done 10 days to two weeks after spraying. Earth can be thrown toward the corn plants in an effort to smother resistant weeds and annual grasses.

The oil/water emulsion with atrazine performs well. The oil works as a contact spray on emerged annual grasses and the atrazine gives extended control. The best time to apply the mixture is when grasses have emerged but are

still small (1-3 leaf stage).

The oil is a light mineral oil which contains an emulsifier and is sold under the trade names of atra-oil, Korn-oil and Ag-oil.

For best results add the oil while filling the spray tank, good agitation is a must.

Directed post-emergence

To control late-germinating weeds, weed escapes and nutsedge, Linuron at

1 to 2 lb/acre with a surfactant oil water emulsion in 15-20 gallons of water has worked well. Corn leaves will be burned if the chemical touches them, great care must be taken to direct the spray toward the base of the corn plant away from the leaves. This is difficult to do before the corn is 18 inches high.



ANNUAL FORAGE CROPS

THESE are crops which are used to provide forage in the season in which they are seeded. Silage corn is the most extensively grown of these crops in our area. Oats are very useful for these purposes, either grazed to provide an annual pasture or harvested for hay or silage. Soybeans can be used as a high-protein annual forage. Some of the longer lived forages, such as alfalfa or Ladino provide a useful hay or silage pasture crop in the year of seeding if they are seeded early, either alone or with an oat companion crop with the mixture being grazed or taken as silage or hay. In addition to these, we have been evaluating the desirability of using some other annual forages such as sorghum x sudan hybrids, Japanese millet, ryegrasses, kale, rape and fodder radish as alternatives to silage corn or oats as annual forage crops.

Sudan-Sorghum Crosses

Sudan grass and sorghum are both crops that attain maximum use in areas warmer and drier than those where corn is king. Recently, hybrids of these two crops have been developed and these are gaining considerable use in the areas where the two parent crops have been grown. It is also possible that these crops may have enough extra

vigour to warrant their consideration in areas as cool as our own. They can do one thing that corn cannot and that is they recover after cutting or grazing. We have had these crops become about 36 inches tall by August 1st, have harvested leaving a 6-inch stubble and they have been 36 inches tall again on September 1st. A 6- to 8-inch stubble must be left when they are cut in August because the buds for regrowth are in the lower stem areas. Cut too close and you get no regrowth. They can be animal-grazed but it is much easier to control the stubble height by using a forage harvester set to cut at 6 or 8 inches. If a farmer finds he does not need this crop for pasture or green chop in August, he can let it go and harvest silage or make a coarse hay in September. In our trials, these hybrids have fallen far short of corn in silage yield, but the alternative use that does not require a decision as to green crop pasture or silage use until you know if you need extra pasture gives flexibility to your forage program.

Varieties

We have examined a large number of varieties in our preliminary trials and have found little difference among the following. They have been developed by different seed companies and

you are likely to find that your seedman carries only one or two of these. Any one of the following is a good choice if you wish to try this crop. *Mor Su, Funks 77F, Greenlan, Jacques J. Sue, Sudax 11.*

Cultural practices

Select as warm a soil as possible. Soil temperature around the seed should be at least 60°F and 65°F is better. If your soil does not reach this temperature by June 1st, forget about the crop. Fertilize as for corn. Topdress with nitrogen after cutting. Broadcast, drill with grain drill or plant in rows. Rows require less seed per acre and are trampled less by grazing. Grain drilling is preferable when harvesting with machines. Require 35 to 50 pounds of seed per acre.

This crop suffers severely from weed competition so use clean land and keep weeds under control.

Beware of feeding before 18 inches tall or when the crop is suffering from cool growing conditions or within two days following a frost. Cattle poisoning can result from feeding at the wrong stages of growth or immediately following a frost. We have no information on just how much risk of cattle poisoning exists under our conditions. We exposed two sheep to what we con-

Under our conditions, the sorghum-sudan crosses do not offer serious competition to silage corn. There will undoubtedly be more of these appearing on the market in the future. The farmer will do well to consider carefully the climatic requirements of these materials before he uses them extensively in his own farm operation.

Most of the annual forages like corn require high nitrogen and adequate phosphorus and potassium. Phosphorus and some nitrogen should be banded near the seed for early growth. Potassium and nitrogen can be broadcast before seeding.

Weed Control

If only broadleaf weeds are present then 2,4-D amine at 6-8 oz. in 10-20 gallons of water when the crop is six inches high is effective and much cheaper.

When grown under the conditions described for sorghum x sudan hybrids, Japanese millet has equalled or exceeded the hybrids in dry-matter yield in our trials. It does relatively better as you go into the cooler, more moist parts of the province. When cut as green chop, it produces regrowth like that from sorghum x sudan hybrids. There is less risk of poisoning cattle with this grass if fed following a frost. There is some risk of nitrate poisoning with this, oats, or any other grass that has received heavy nitrogen fertilization and

There are no improved varieties of Japanese millet. Other millets are entirely different crops and are not suitable for this purpose.

These include Italian ryegrass, West-
er-wolth's ryegrass and perennial ry-
grass. They are sometimes used in place
of a cereal grain as a companion crop
when slower establishing perennial for-
age crops are seeded for pasture. They
provide some grass pasture in the year
of seeding. Perennial ryegrass is general-
ly thinned out or completely destroyed
during our winters.

Kale, rape and radish

Marrowsstem kale seeded in the spring at the same time as corn and the sorghum x sudan hybrids has not equalled corn as a silage crop at Macdonald College. It suffered considerable injury from insects. It did not retain its leaves following frost in September in 1964 or 1965 but it stayed in a good condition following frost in 1966. Kale is noted for its ability to keep green well into the fall when grown in the British Isles. It appears that the change from hot to cold came too rapidly at Macdonald College in 1964 and 1965 for the necessary cold tolerance to develop in the plants. This may be a better crop in cooler parts of the province. Yield fell far short of corn at Macdonald College and

Broadleaf rape holds leaves better than kale during cold weather but yields less as a spring-sown crop. However, rape seeded in early August gave higher dry matter yields than oats in a trial seeded August 5, 1966 at MacDonald College and harvested 60 days after seeding. The only entry that out-yielded the rape was the early fodder radish.

Fodder radish is a crop that we have tested for two years in small plot trials. It is promising as a fall forage or as a rapid growing spring forage. It can go from dry seed to two tons per acre dry matter yield in 50-60 days. This yield includes stem, flowers and the above-ground portion of the roots. When sown thinly, roots may reach 10 inches long and 4 inches in diameter or the crop will be mainly stems and leaves if sown more thickly. It establishes rapidly, so it smothers weeds, has good digestibility and is nearly immune to club root disease. It has been evaluated as sheep fodder in Europe but we have no data yet on its value for feeding cattle. Some plants sown in the fall of 1966 at Macdonald College evidenced excellent frost resistance. The leaves were still green when they were covered with snow in early December. Some seed of this crop is marketed in Europe, but we know of no seed source here at present. Any farmers interested in the possible use of this crop should make their interest known to us so that we can search for seed. Some trials are planned at Macdonald College this summer. Choice of variety appears of considerable importance with this crop and the early varieties appear most promising.





OIL SEEDS CROPS FOR QUEBEC

SOYBEANS, rapeseed and flax are crops which are likely to play a greater role in the future. The canning crops have a fairly well established position in the economy where a suitable market occurs. The same may be said with respect to sugar beets. In many cases the market dictates the specific variety to be grown and might indicate the necessary management practices in order to achieve optimum results. There will be an increasing demand for these crops in the future, particularly those that produce the edible oils. The farmer, however, should only move into these when a market is assured for their sale since they cannot be readily fed on the farm, although there are reports of soybeans being grown with success as a protein supplement for livestock.

These crops normally replace one of the coarse grain crops in the normal farm rotation. Generally, they follow sod and precede the reestablishment of the forage mixture.

General adaptation of oilseed crops

SOYBEANS. The chief limitations to soybean production in Quebec are temperature and the length of growing season. Only early varieties requiring an accumulation of 2700 or less heat units can be considered, and these only for Zone One. Later-maturing varieties will not ripen before killing frost and both yield and quality will be reduced. Soybeans are adapted to a wide range of soil types, but respond best on loam soils. It is the highly fertile, highly productive soils that pay off.

FLAX. The general adaptation of flax to climate and soil is similar to that of oats. Varieties recommended for Quebec require 80 to 110 days to reach maturity, depending on location. The most productive varieties are limited to Zone One, but early varieties can be grown in Zone Two and Three.

RAPESEED. This is a very widely adapted crop that should be well suited to climate and soils in Quebec. It is a relatively new crop in this province,

however, and experience in practical production is limited. This crop is not generally as drought-tolerant as the cereals, but this is not likely to be a serious limitation in Quebec. Best results can be obtained on loamy soils that will not bake to form a hard crust, restricting seedling growth.

Variety recommendations

SOYBEANS. Only two varieties, *Hardome* and *Merit* are considered sufficiently early-maturing and sufficiently high-yielding to be recommended for Quebec. Plot trials indicate that these varieties will yield from 30 to 40 bushels an acre on good soils.

FLAX, MARINE and RAJA are early varieties that can be grown in Zones One, Two or Three. Marine is higher in oil content and may be expected to produce more pounds of oil per acre. Both varieties are blue-flowered. **NORLAND** is a medium late-maturing, white-flowered variety, suitable for Zone One. This variety is highest in oil content of the three recommended, as well as being high-yielding.

RAPESEED. The limited experience to date has not permitted recommendation of specific varieties for Quebec. Varieties of the Polish type (early maturing) under test include *Arlo*, *Echo* and *Polish*, as well as new plant breeders' strains not as yet licensed for sale in Canada. In the Argentine type (late maturing) *Target*, *Nugget*, *Tanka* and *Argentine* are being tested along with unlicensed strains. Since this crop must be disposed of through oilseed processing companies, and some varieties are preferred to others for processing, it is well to check with a company before going into production.

Cultural practices for top yields.

Generally speaking, the principles outlined for maximum productivity in small grains apply to oilseed crops as well. Since these crops are grown primarily for oil extraction, particular attention must be paid to the selection of varieties acceptable to the processing industry.

Early spring seeding is recommended for flax and rapeseed, while sowing of soybeans, like corn, must await the warmer soil conditions of mid- to late May. Soybeans germinate slowly in cold soil and grow slowly in cool weather, so there is no advantage in very early planting, and some risk. As a legume crop, soybeans are able to obtain a large portion of their nitrogen requirements from the air, provided the proper bacteria are present in the root nodules. In areas where soybeans are being grown for the first time it is important that the seed be inoculated with the specific type of inoculum for that crop. The inoculant can be applied in the drill box at planting time.

Solid planting (as for cereals) is generally practised for flax and rapeseed, but soybeans are better grown in 21- to 28-inch rows to permit inter-row cultivation for weed control.

Fertility requirements

Soybeans contain 110 lbs. N, 35 lbs. P_2O_5 , 40 lbs. K_2O per 25 bushels. Some of the nitrogen will be fixed from the air provided the seed is inoculated. Nutrients not supplied by the soil must be broadcast or pre-drilled before seeding, or banded beside and below the seed as with corn. Manganese deficiencies may occur.

Flax, with its weak root system, requires readily available fertilizer close to the seed. The content of 15 bushels of flax seed are 30.5 lbs. N., 12.5 lbs. P_2O_5 , and 8.2 lbs. K_2O . Thus fertilizer needs are easily met, and are similar to small grain needs.

Rapeseed requires high phosphorus and potassium levels and medium nitrogen levels. As with flax, fertilizer must be readily available for early growth. Fertilizer needs for the development of vigorous plants may be 50% higher than for flax.

Weed control in soybeans

Weed control in soybeans is in much the same category as weed control in corn except that different chemicals are used. Preplanting, pre-emergence and post-emergence treatments all have

a place in the fight against weeds.
PREPLANT: To control grasses trifluralin at $\frac{1}{2}$ or $\frac{3}{4}$ lb./A on light to medium soil and 1 lb./A on heavy soil in at least 20 gallons of water has been effective. This chemical must be incorporated immediately after application with a rotovator or twice over with a double disk, once lengthwise and again crosswise.

PRE-EMERGENCE: Chloramben at 2-3 lb./A on clay soils in 30 gallons of water, or in the granular form

applied immediately after planting will control most germinating weeds. Any weed seedlings which escape can be removed with the rotary hoe.

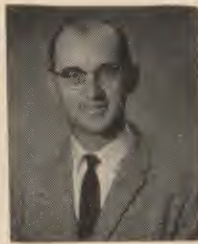
For soils high in organic matter linuron at 1 lb./A on sandy soils, 1 to $1\frac{1}{2}$ lbs. on sandy loams and up to 2 lbs. on clay loams in 30 gallons of water can be safely used. Here again any escape seedlings can be controlled with the rotary hoe and the incorporation of the linuron may make it more efficient.

POST-EMERGENCE: To kill small emerged weeds or as an alternative to the rotary hoe if soil conditions have been unfavourable for its use, dinosebamine at 3 to 4 lb./A in 25-40 gallons of water applied before the crop has reached the stage where the first true leaves are half an inch long gives best results when air temperature is above 60-65°F. but may cause injury to the crop if the temperature is above 85°F. Low pressure (30 psi) and a coarse spray are recommended.

THE CONTRIBUTORS



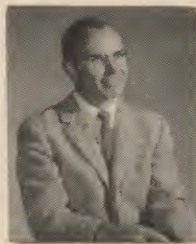
Dr. Stepples



Dr. Klinck



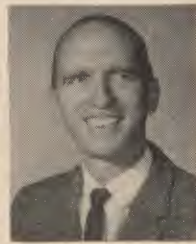
Dr. Bubar



Dr. Brawn



Mr. Keeley



Dr. MacKenzie

Dr. Howard Stepples is Chairman of the Department of Agronomy. He has a broad interest in developing the potential of all crops adapted to Eastern Canadians conditions. *Dr. Harold Klinck* specializes in cereal crops. He is a member of the provincial, federal and private organizations responsible for the introduction of new varieties, and has several of his own to his credit including Dorval oats and Champlain barley. *Dr. John Bubar*, in charge of the forage breeding program, has his first licensed variety on the market — Leo trefoil. *Dr. Robert Brawn's* specialty is genetics. His corn breeding program is supplying valuable material for research and variety development. One variety, M.C.101 is outstanding for early maturity. *W. W. Wink Keeler* is superintendent of the Provincial Seed Farm and, as a member of the Agronomy staff, he has a special interest in weed control. *Dr. A. F. (Gus) MacKenzie*, as Chairman of the Department of Soils, has an intensive research program in soil fertility on the go. Under his direction, the new automated soils lab came being last year.



ROYAL COMMISSION ON AGRICULTURE VISITS COLLEGE

Norman Campbell and Mrs. Margaret Sheldon of the College Staff explain to Quebec's Royal Commission the use of the 1620 computer in the Dairy Herd Analysis program. Left to right: Dr. Roland Poirier, Dean, Faculty of Agriculture, Laval University; M. L. Dugas, farmer, Nouvelle, Bonaventure County; M. Cousineau, Director of Extension, University of Sherbrooke; M. E. Moreau, Legal Advisor; M. Tremblay, Assistant Dean, Faculty of Social Sciences, Laval University; Gordon Thompson, farmer, Abbotsford.

Compiled by T. Pickup of the Information and Research Service,
Quebec Department of Agriculture and Colonization.

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PHOTOGRAPHS BY
OMER BEAUDOIN

Honey in Short Supply



Claude Gervais of St-Timothée, Laviolette, makes a promising start in beekeeping by recovering a swarm.

THE Quebec market could absorb at least three times the amount of honey now being produced by Quebec's beekeepers, said Mr. Roméo Lalande, Deputy Minister of Agriculture and Colonization, addressing the annual meeting of the Professional Beekeepers of Quebec at the Queen's Hotel in Montreal in February.

Pointing out that the output is declining year by year, Mr. Lalande said that honey production for Quebec in 1965 was less than 2,500,000 pounds, as compared with 5,400,000 pounds in 1947.

"However paradoxical it may seem," continued Mr. Lalande, "the principal reasons for this decline are directly connected with technical advances in agriculture: the more the practice of early haymaking becomes widespread, the shorter the duration of the honey flow and the fewer clover and grass flowers remain for the bees to gather honey from. Furthermore, the development of chemical control of plant and fungus pests of crops often leads to poisoning of bees by pesticides." Mr. Lalande assured the members of the Association that the Department of Agriculture and Colonization intends to draw up a programme of measures designed to lessen the risk of poisoning pollinating insects with pesticides. These measures could be classed under three headings: legislation, research and surveys, and education and information.

Mr. Lalande concluded by inviting all Quebec beekeepers to group themselves under one association so that close collaboration could be established between them and the Department of Agriculture and Colonization with a view to restoring apiculture to its former importance in our agriculture.

Programme For Renovating Quebec's Dairy Industry

SPEAKING to members of the Coopérative Fédérée du Québec at their annual meeting in the Queen Elizabeth Hotel in Montreal, Mr. Clément Vincent, Minister of Agriculture and Colonization, recently outlined a three-point programme for renovating Quebec's dairy industry.

The programme comprises a plan for the modernization of dairy plants, a continuing project for improving the quality of milk, and (temporary) deficiency payments to producers of manufacturing milk in handicapped areas who are obliged to ship to plants where diversified processing is practically non-existent.

Modernization of dairy plants

This part of the programme is designed to group existing plants on a regional basis to encourage the establishment of dairy plants able to pay producers top prices for their milk. The Department of Agriculture and Colonization expects to organize 15 to 20 such regional dairy plants within the next three years. The Government is also considering an assistance policy to aid the construction or improvement of these regional plants. The terms of

the policy will first be explained in the legislative assembly.

Improvement of the quality of milk

Mr. Vincent said that confidential reports had shown an urgent need for regulations in this field, that "a considerable proportion of our producers and processors have millions of bacteria in their products", and that his department therefore intended to issue new regulations in the near future concerning scrupulous marketing and the wholesomeness of food in general.

Once this preliminary step in the direction of stricter hygiene has been taken, an educational campaign stressing quality will be launched and a new set of regulations specifically designed for the dairy industry will be put into effect in order to control the remaining sources of quality defects more effectively.

The department also proposes to stress contests for improving quality, such as the present ones for cheese-makers, and to set up regional laboratories which will facilitate discriminating culling of herds and dissemination of information and techniques necessary for improving milk production on the farm.



Bertrand and Jean-Guy Boulet of Notre-Dame de Palmarolle in Abitibi-West with two heifer calves that will never see their father. (He is at the A.I. center at Saint-Hyacinthe.)

Mr. Vincent added that, starting this year, the government proposes to allot an increased share of its budget to the installation of cooling tanks and farm milk-houses and, next year, to revise the Farm Credit Act to make it effective for these purposes.

Deficiency payments

The deficiency payments policy is intended to be temporary and to consist of the payment of a gradually decreasing percentage—over a three-year period—of the difference between the average provincial price and the average national price for all manufacturing milk.

Mr. Vincent said that his ministry also believes that, if federal policies for cream prove inadequate, it should standardize cream prices on a similar basis (making due allowance, of course, for the value of the skim milk).

The Minister of Agriculture and Colonization had previously explained that, for the above-mentioned purposes, the government would use the money it has been paying in subsidies to manufacturing-milk producers. This subsidy will be discontinued on April 1st 1967 when the federal government assumes full responsibility for an increase of 33½ cents per hundredweight (as compared with last year) in the basic average price, applicable to producers throughout Canada. The cost of this increase will be paid for either through a direct rise in the retail price of dairy products or by an increase in the federal subsidy of 75 cents per hundredweight to the producers.

A peaceful scene amid the hills of Stanstead County.



This page supplied in the interests of the Family Farm by the Quebec Department of Agriculture and Colonization.

PINNING DOWN A FLAVOUR

What has the following flavour—amplitude (1), green hay (1), sour (2), fruity (2), bitter (1), astringent (1)? Answer: a raw tomato. Information of this order is the province of Miss Margaret Dixon, head of the Food and Flavour Department of Arthur D. Little's Research and Development division at Inveresk Gate, Edinburgh. She would explain that that same tomato carefully cooked and seasoned would turn out to have an amplitude of 2, a sourness from threshold to ½, fruity (1), sweet (2), buttery (2) and bitter (½).

It will perhaps come as something of a surprise to find that in this foam-rubber-bread world, food manufacturers are concerned with flavour at all. But Miss Dixon's method of classifying flavours is in great demand in just those circles.

Before so intangible a quality as flavour can be evaluated, however, it has to be put on a scientific footing. Miss Dixon has trained flavour "panels", the members of which have been selected by a rigorous testing procedure from among the laboratory staff at Inveresk, and gets them to analyse the flavours of a particular product. Each characteristic of flavour is described in easily understood terms (for "green hay" read "grassy"). An effective panellist must be so familiar with this terminology that in a series of sniffs and bites he can write down accurate word descriptions of aroma and flavour. What was the overall impression of quality—the "amplitude"? What were the discernible characteristics or "notes", and how strong were they? In this way a panel can build up a completely reproducible profile of a flavour.

These profiles can then be used to compare flavour changes from batch to batch, treatment to treatment, or pack to pack, pinpointing differences and enabling them to be eradicated. Other applications of the technique include quality control, comparison of flavour and odour of competing brands and the study of "off-flavours" resulting perhaps from packaging materials. Among the products tested have been soup, fruit juice, scotch whisky, and biscuits. The method is now being applied to the actual design of a new beverage.

(From "New Scientist")



This page supplied in the interests of the Family Farm by the Quebec Department of Agriculture and Colonization.

MAPLE PARK JERSEY FARM

Edward Johann's farm at Dixville in Stanstead County evidently takes its name from the breed of cattle kept on it and the fine big maple trees lining the driveway. It is a splendid property which the father of the present owner entered for the Agricultural Merit contest on a number of occasions, earning second place among the competitors for the gold medal in 1951. The fact that, fifteen years later, his son Edward has also placed second in the silver-medal section at his first attempt shows that he has succeeded in maintaining the family farm at a high level of productivity.

There are 318 acres altogether: 132 in crop, 60 in pasture, 72 in woodland and 54 uncultivated. The medium-textured, fairly deep soil responds wonderfully to fertilizer and lime and, in fact, the condition of the crops confirms what Mr. Johann says about that. Clover is plentiful in the aftermaths, the pastures are dense, the oats are splendid, and the two silos are filled with clover. Moreover, the forage crop is plentiful enough to winter 113 head of cattle.

The soil is well drained and, in addition to manure, receives applications of about 40 tons of lime and 7 tons of commercial fertilizer a year. This competitor is well aware of the value of manure and the part it plays in maintaining soil fertility and he therefore takes great pains to conserve it by means of a tight shed with a tank and pump to take care of the liquid manure.

The herd of Jersey cattle consists of 50 cows, 60 heifer calves and bred heifers, and two bulls. Unfortunately Mr. Johann stopped his dairy herd testing for 1966. The 1965 report for 44 cows shows a yield of 227,364 pounds of milk and 12,020 pounds of fat. The last available production ratings are BCA's of 74 for milk and 73 for fat. These cows are thus not very high producers even when due allowance is made for the size of the breed. The milking herd could be improved but the appearance of the two bulls does not inspire confidence in this respect. A better herd would give a

worthier response to the feed supplied to the cattle on this farm. The competitor should pay attention to this point if he is aiming for the gold medal.

The milk, which is sold at \$5.35 a hundredweight on the fluid market, is the farm's chief source of income followed (in order of importance) by sales of livestock, grain, and maple syrup from 1,500 trees.

The barn is light, clean, ventilated and conveniently equipped and the mow is filled with bales of hay whose orderly arrangement bears witness to Mr. Johann's liking for a job well done. His concern for order is also shown by the arrangement of the implements in the big machine shed. The milk-house is heated, shining with cleanliness and well ventilated. There is a good granary and a former piggery at right angles to the main cowshed is used to house the young cattle. A pond has been excavated near the barn to provide a handy source of water in case of fire. A pump has been installed for immediate use at the slightest hint of danger.

Although he has two silos, Mr. Johann does not ensile corn. The crops are limited to 36 acres of Garry oats and 80 acres of hay. Of the 70 acres of pasture, 20 are under a rotation separate from the principal four-year cycle of crops. In 1965, the hayfield yielded two tons to the acre and the oats 55 bushels. Yields of forage and oats for 1966 were doubtless much bigger than those of 1965.

The farm is highly mechanized as a result of its limited labour resources, the value of the machinery being listed in the accounts as one quarter of the total investment. With the aid of three tractors, a pick-up truck, a hay conditioner, combine and forage harvester and the occasional help that he can get, Mr. Johann manages to do his work.

Mr. Johann is married and has a son and a daughter; he leads a happy life in this corner of "La Belle Province" where the topography is reminiscent of the country—Switzerland—from which his father came in 1918.



ARDA DEVELOPMENTS IN QUEBEC

Mr. Clément Vincent, Minister of Agriculture and Colonization, who is also the Minister responsible for the application of ARDA in Quebec, announced during his visit to the Arda-Quebec Administration's display at the National Salon of Agriculture in Montreal, that the Quebec Government will make maximum possible use of ARDA funds to develop the resources of handicapped rural areas.

Mr. Vincent emphasized that Quebec is the province which has benefited most from the federal-provincial agreement on agricultural rehabilitation and rural development. The agreement provides for sharing of expenses between Ottawa and the provinces in the carrying out of programmes of economic and social improvement in rural regions.

(please turn on page 18)



Young Guy Dumont of Ste-Hénédine in Dorchester County realizes the usefulness of a good bale of hay

TERMS OF EMERGENCY HAY SUBSIDY

THE Minister of Agriculture and Colonization, Mr. Clément Vincent, has announced certain readjustments in the application of the government's policy of assistance to farmers in counties of the Lower St. Lawrence for the purchase and transport of hay.

Mr. Vincent pointed out that the terms and conditions of the policy were set temporarily last December in order to meet an emergency, namely to ensure that farmers in the afflicted area would be able to obtain hay for their animals at a reasonable price. He said that the government did not know at the time how much it would have to pay for hay nor how much hay would be needed but that, in view of subsequent events, it is now possible to announce the complete programme.

The hay, which the Department of Agriculture and Colonization has hitherto been selling to the farmers for \$15 a ton, will henceforth be offered at \$13 a ton and a rebate of \$2 a ton will be made to all farmers who have, up to now, paid \$15 a ton for hay purchased outside the distressed area. This rebate of \$2 will also be added to the \$5 a ton paid on hay bought by the farmers within the six counties concerned (Rimouski, Matapédia, Matane, Rivière-du-Loup, Témiscouata, and Gaspé North). The final date for receiving orders for hay has been by set the department at March 15th, 1967.

Mr. Vincent also announced that, as the quantity of hay purchased has been reduced because some farmers have cut their grain prematurely to use as green feed for the cattle, the department will pay a subsidy of \$7.50 an acre on grain crops harvested as green feed and used to feed animals either in the barn or in the pasture. It is to be understood, however, that this subsidy does not apply to grains grown as a nurse crop in permanent pastures.

These assistance measures for the purchase and shipment of hay were initiated by the department following adverse weather conditions in the above-mentioned six counties in 1966. Under their terms, the department has bought hay outside the distressed area at \$18 a ton (delivered to various loading points on the Canadian National Railway) for resale to farmers in the distressed area at \$15 a ton. Costs of shipping the hay by CNR are shared equally between the railway company, the federal government, and the provincial government. The provincial government also assumes the expense of inspecting the hay and of transporting it from the nearest CNR station to parishes not served by the railway.

The policy also provides that all the farmers who rented land in order to cut hay on it shall be compensated at the rate of \$5 a ton—compensation being based on the average actual yield for the district and taking into account the percentage or normal productivity. A sworn statement is required for obtaining this grant.

□

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ARDA —

(continued from page 16)

Mr. Jean-Baptiste Bergevin, Assistant Deputy Minister and director of the Arda-Quebec Administration (the Quebec Government body which collaborates with the different ministries concerned to study and implement ARDA projects) pointed out that Quebec has

committed nearly \$45 million to these projects since 1963. He said that it was important to realize that the projects have been planned within a framework of regional development, with a view to the rational utilization of the special resources of each region.

The Arda-Quebec Administration's display was designed and set up with the object of making these achieve-

ments better known to the public and to give an idea of the general planning concepts underlying them.

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ESTIMATE OF ACREAGE OF VEGETABLES FOR FRESH MARKET OR FOR PROCESSING, PROVINCE OF QUEBEC, 1963-1966

	Planted acreage				1966 compared to 1965
	1963	1964	1965	1966	
FRESH MARKET	acres	acres	acres	acres	%
Asparagus	280	290	290	300	103.4
Beets	1,270	1,440	1,530	1,330	86.9
Carrots	7,800	8,730	9,910	8,640	87.2
Celery	450	390	370	320	86.5
Cabbages	2,390	2,540	2,200	1,980	90.0
Cauliflowers	830	1,000	1,140	890	78.1
Cucumbers	2,620	2,990	3,180	3,090	97.2
Spinach	200	250	230	230	100.0
Beans	1,120	950	1,310	1,070	81.7
Lettuce	2,490	2,650	2,670	2,170	81.3
Corn	7,850	8,020	9,010	8,050	89.3
Table turnips	1,900	2,190	2,230	2,150	96.4
Onions	2,860	2,500	3,000	2,600	86.7
Tomatoes	2,970	2,740	2,750	2,380	86.5
TOTAL: Fresh Market	35,030	36,680	39,820	35,200	88.4
PROCESSING					
Beans	13,370	14,790	14,740	14,300	97.0
Corn	8,860	9,530	10,330	9,900	95.8
Peas	16,570	18,940	17,250	14,850	86.1
Tomatoes	1,610	1,460	1,100	960	87.3
TOTAL: Processing	40,410	44,720	43,420	40,010	92.1
TOTAL AREA	75,440	81,400	83,240	75,210	90.4

Source: Quebec Bureau of Statistics



The Month With The W. I.

ABITIBI: Matagami: Miss E. Clark, school librarian, spoke on the work she does with students, and displayed a few of the many fine books now available in the library.

ARGENTEUIL: Brownsburg: speaker for the evening was Rev. Dr. Ritchie Bell, minister of the Margaret Rodger Memorial Presbyterian Church at Lachute; he spoke on The Three Most Important Institutions — the Home, The Church, The School, a most interesting and thought-provoking subject; each member named a country participating in Expo. **Dalesville-Louisa** answered roll call with a memorable recollection of their grandparents; Valentines made and judged with prizes for the winners. **Frontier** held round-table discussion of meals from our home-freezers; for roll call each brought something she had made; plans made concerning the making of quilts to be used in an emergency; quilt on display, quilted by a member for the Red Cross. **Jerusalem-Bethany:** Mr. Edmund McPaul, member of the Building Committee of the Senior Citizen's Home, was guest speaker, giving interesting information on the progress of the Home; answered roll call by submitting a new recipe which they had tried recently. **Lachute:** discussed plans for entertaining WI guests from Ontario in June; will have a history of their branch on exhibit at the Lachute Spring Fair; Mrs. E. K. Wilson gave a delightful talk on her recent trip to Hawaii, New Zealand, Tahiti and Mexico. **Morin Heights** enjoyed looking through the program of a WI branch in Saskatchewan. **Pioneer** held a Valentine Card Party. **Upper Lachine East End** answered roll call with "a lover's quotation"; started work on two quilts, one to be a centennial pattern and sold at a later date; completed their Red Cross Knitted Afghan; member read poem on Canada which she had written.

BROME: Abercorn Conveners gave many items of interest in their departments; branch is trying a new slant in program planning—in lieu of a program committee, each convener will plan her own meeting and the results will be put together for a complete

program for the coming year; exchanged Valentines and a small gift; Flambeau Home acknowledged gifts of clothing sent by the branch; 2 packages of remnants were received, and were sold. **Austin** sent a Pictorial Calendar to their English Link; Miss Ada Sandall gave a talk on her work in Korea, where she was a medical missionary for 36 year; donation made to her mission project; report of Austin Library from July 1, 1966 to Feb. 1 1967 showed circulation of 3500 books, with almost 4500 catalogued, and a nucleus of 250 French books on hand; shellcraft rug brought in for Bazaar; donated \$100 to Brome County Historical Society. **Knowlton's Landing** heard paper by convener of Citizenship; collected Pennies for Friendship. **South Bolton** read a Valentine poem for roll call; talent money brought in. **Sutton** sent Valentines to shut-ins; interesting papers on nutrition and on cultural beauty; Mrs. Westover told of her trip to Montreal to meet a visiting English WI member, and their visit to Eaton's Exhibit of Eskimo Art and Sculpture; members dressed to represent a song, with other members guessing the names of the song; Centennial project—planting trees in the newly developed town park, and flowers to be planted in the new parking lot.

CHATEAUGUAY - HUNTINGDON: Aubrey-Riverfield: aided by a model of the plan for the Chateauguay Valley Regional School, a talk fest was held on the new school; Valentine Food Box sent to Preston Home, and Valentines to Children's Home in Lachine; three cartons of articles sent to Douglas Hospital. **Dewittville:** Mr. K. Howden, publisher of the Huntingdon Gleaner, spoke on the history of the newspaper, and on printing and publishing; arranged semi-finals in public speaking contest in Huntingdon High School; held their Annual Winter Carnival at their rink; Mrs. Wells gave a two-week dress-making course; Dr. John Whitehead of Ormstown spoke on Rabies, followed by practical discussion on how to warn and to protect our children; film showed what can happen in a community when rabies

shows up; erected Centennial Sign in Dewittville; held exhibit of articles made in the sewing course. **Dundee** donated hot lunches in local elementary school. **Franklin Centre** contributed to Quebec Service Fund, and to the Chateauguay Valley School for Retarded Children; catered for a Nazarene Youth Rally. **Hemmingford:** High School Principal, Mr. F. Matheson spoke on the reorganization of the school system in Quebec with particular reference to the changes in curriculum and grading under Regulation L.; homemade Valentine Contest; accompanied by a rhythm band up of members, learned Bobby Gimby's Centennial Song "Canada". **Howick:** amusing play read by several members; demonstration on making of Spumoni, an ice-cream dessert. **Huntingdon:** Mrs. Catto, RN gave informative talk on First Aid; Contest on words made from "Valentine Day" with the winner making a list of 123 words. **Ormstown:** humorous talk given by Rev. A. E. Loree, United Church Minister, on Life at Its Best; arranged the details of the County WI Public Speaking Contest held at Ormstown High School.

COMPTON: Bury held a very successful sewing course given by Mrs. Wells; are now conducting an art course given by one of their members, Mrs. Fitzsimmons; member gave a talk on the early history of the township; held jumbled letter contest on famous Canadians. **Canterbury** are making a quilt to be donated to family who recently lost their home by fire; shower planned for needy family. **Cookshire:** Miss Esther Farnsworth told of her trip to Bermuda, illustrated by numerous snapshots; good conveners papers read on: 1) Cooking Meat in a Car on the Highway; 2) Can we Feed the Hungry Half of the World by Dr. Poirier; 3) New Method of freezing a rare type of blood; 4) the opening of a new allergy laboratory at McGill, and new recreation room at Douglas Hospital; 5) Resolutions for the New Year; a member read an article entitled Nine Ways to Kill an Institute; saw a film illustrative of the Saguenay River; article read on ACWW; a bring-and-buy cookie sale

held; Valentines sent to shut-ins. **East Angus:** Mrs. W. Coates gave a Broadcast on "School Bursaries in Compton County"; roll call answered by naming a prime minister of Canada; paper drive held with good financial returns; poems read; pair of deerskin gloves made and donated by a member to be sold for branch funds. **East Clifton:** Mr. Don McMillan, agronomer of Cookshire attended meeting, and spoke encouraging words to the men present, and answered many questions of interest; Home Economics Convener spoke on Household Conveniences; donation in memory of deceased members given to Cemetery Committee, and donated to Quebec Service Fund. **Sawyerhill:** teacher from the High School spoke on two subjects: Education Viewed as a Threat, and Education and Economic Growth; discussion followed on cost of education to age 21, and it was agreed that the education of a boy to this age is more costly; centennial project is to plant flowers on the Town lawn. **Scotstown** saw slides of Northern Canada Women's Institutes; "Horn of Plenty" movies shown, given by an Ontario WI Branch.

GASPE: Darmouth River held contest on historical events; named a favourite pastime; donated rocking chair to Hotel Dieu Hospital, and sent gifts to mental patients at Ross Sanitarium. **Gaspe** held a bring-and-buy candy contest and sale; members are selling Carnival Queen tickets; donation to Student Council to help finance their trip to Quebec City for Basketball Tournament; Education Convener read paper on Sanctions against persons guilty of fraud in Departmental exams, 1966, and by publicity convener on "Our First Centennial"; food baskets sold to raise funds. **York** named one important day typical to each month; made Valentines which were judged; talk on African violets; tips on cleaning silver; Centennial quilt now being made by members for sale later; collected Pennies for Friendship.

GATINEAU: Aylmer held contest on "Know a Canadian City"; five dozen mugs for soup given to school; contest on homemade Valentines; demonstration on darning and good housekeeping. **Eardley** held sale of handmade articles; donated to Milk Fund; did Red Cross sewing. **Rupert** purchased electric stove for WI Hall; donated to Milk Fund; sent "goodies" to ladies at Morningside Home; roll call on what to put in lunch boxes. **Wakefield** held card party and Gourmet Bake Sale; canvassed for Blind; donated to St. Anne's Hospital. **Wright** sent treats to shut-ins; toured the home of Mr. and Mrs. R. Hale who are turning the old Books home into a Pioneer Home; discussed Eskimo and Indian WI's and read about

the Negro WI in Nova Scotia.

JACQUES CARTIER: CAC note on potatoes read, short discussion on teachers strike, and sing song marked the February Vice-Presidents meeting. It is planned to sing some Canadian songs at each meeting (a good example to follow).

MEGANTIC: Inverness has several members working on hand articles for exhibition at Convention, and also on a quilt and a chesterfield throw to be sold later to raise funds; sent Valentines to ill and shut-ins. **Kinnear's Mills** answered roll call by stating "What I have left undone to attend this meeting"; welcomed back their president who has been ill; sent gift to member's small son who is hospitalized.

MISSISQUOI: Cowansville heard a talk on Regional High Schools, their advantages and their problems; held amusing contest on the use and misuse of words; realized a satisfactory sum from showing of slides to which members brought guests. **Dunham** brought in articles for Cancer Society and gave money from sale of a Valentine Cake to the society; donated to Save the Children Fund; paid tribute to Charter member, Mrs. McElroy who passed away on Jan. 1; presented Mrs. O.C. Selby with a gift on her 85th birthday. **Fordyce** held a contest on health; \$25 earned by members by quilting a quilt on order; Mrs. Moore was commissioned to arrange the wording on a plaque to designate their picnic plot, their centennial project. **Standbridge East** practised singing "Something To Sing About" for use at future meetings; held quiz on Expo '67; will make Christmas stockings.

PONTIAC: Beechgrove heard Rev. Mr. McColl as guest speaker; purchased a wheel chair as their Centennial project; discussed forthcoming play; donated to Disaster Fund; held card party. **Fort Coulonge** saw film "Tuesday's Child" and another "Coronation Day" obtained from the Quebec Film Board; readings, current events and household hints given; donated to Cup of Milk Fund. **Quyon** named Fathers of Confederation as Roll call; letter sent from the branch to their Member of Provincial Parliament, protesting the recent proposal to lower the legal age for inoculation for rabies; issued challenge to other WI branches for a Pancake Flipping Race on May 22 at Quyon! **Shawville** donated to Blind; High School Teacher, of Shawville High, gave a demonstration on sewing, and on cutting and laying of pattern pieces.

QUEBEC: Valcartier: Mrs. Lloyd Johnston, RN, guest speaker, gave an interesting talk on the Heart, and answered many questions; medical quiz held on Heart Week; donated to local School toward Centennial Library;

donated considerable sum to the skating rink as assistance to the Valcartier Youth Club; started Christmas Stocking collection; Pennies for Friendship.

RICHMOND: Cleveland entertained guests; sold articles made from remnants of material. **Gore** heard an article read by Mrs. G. Coote, on "Come Marketing" taken from Home and Country, England; sent a rosebowl, with a rose to be renewed weekly to a member in hospital; auction of remnants brought in funds; handmade Valentines sent to Dixville Home; sale of cards, etc., by the branch netted about \$60; 8 pairs bedsocks and a shirt sent to cancer patients; donation made to welfare work at St. Francis High School. **Melbourne Ridge** donated to Save the Children Fund. **Richmond Hill** heard interesting article on "How much is a farm wife worth?"; sent two toboggans to Dixville Home; renewed membership in CAC; Mrs. S. Wilson donated box of clothing for Dixville Home. **Richmond Young Women** gave radio broadcast in January on "Our Beefs about Education", Branch sponsored a Home Nursing Course, with 11 members completing course. **Spooner Pond** sold the quilt they have been working on, sold Expo tickets.

ROUVILLE: Abbotsford visited 2 local industries, Le Fer Forge and Les Artisans; members viewed displays of ironwork which included many items from lamps to tables to exterior ironwork for houses; at Mr. Morin's Studio, members watched with fascination as Mr. Morin carved a small Scottish Terrier in 10 minutes; Mr. Morin's specialty is the artistic carving of driftwood stumps and roots; Tea at Chez Cecile in St. Cesaire made a merry ending to an interesting afternoon; report of the Canadian Consumers Protest Ass'n to the Federal Committee on Consumer Credit Prices was read and discussed; paper on the history of the Pomological Society read; contest on guessing the number of pennies in the jar won by Mrs. P. Watson.

ROUYN-NORANDA: The County has been working on several projects with all branches participating; they have plans well underway to hold a Garden Centennial Tea at a later date; sponsored a Leathercraft Course, the technician being Mr. R. Langlais of Montreal; all branches donated to fund to sponsor a student to the United Nations Seminar. **Farmborough** held quiz on Safety; sent birthday gift to the oldest resident of the locality. **Noranda** donated a food voucher to a needy family; entertained Farmborough at a social evening, with an exchange of gifts, and films and slides of Europe shown by a member; started working

(continued on page 21)



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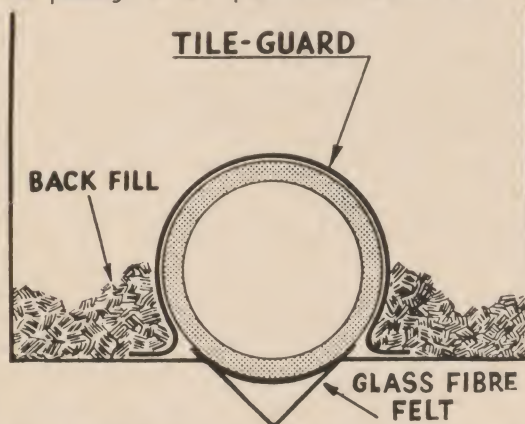
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WI MONTH —

(continued from page 20)

on Christmas Stockings; gift to member for a new baby. **Rouyn** donated a food basket to needy family; held a quiz; sold a special cake.

SHEFFORD: Branches continue with their road sign project. **Granby Hill:** member showed a "Constitution of Canada Chart"; good articles read by conveners; held a telling-and-smelling contest; 10 Christmas stockings completed; monthly parcel sent to patient at Douglas Hospital. **Granby West:** contest on words with all letters in "secretary"; collected Pennies for Friendship. **Waterloo-Warden** enjoyed visit from County President who briefed meeting on County business; private card parties held; began planning for annual school fair; contest on jumbled letters of fruits, flowers and vegetables.

SHERBROOKE: Ascot: Mrs. N. Bowers, MSc, spoke on Ferns and Club Mosses, and showed her mounted collection of specimens of these two species; members brought their collections of six dried, mounted and correctly named wild flowers, which were judged by Mrs. Bowers. **Belvedere:** Mrs. Cloutier, of the Cancer Society, Sherbrooke Division, gave an informative talk on their work, and displayed some of the supplies available to home patients; patchwork quilt made by members was sold at a successful card party recently held; part of the proceeds of this event will go to the County Anniversary Fund; donation made to Lennoxville 4-H Calf Club. **Brompton Road** had contest on Peanut Butter Cookies, won by Mrs. G. Hadenko and Mrs. A. Wright; held successful card party, and

exchange of brooches for St. Valentine's Day. **Milby** held contest on welfare and health; gifts sent to Maplemount Home; hat trimmed with ribbon and flowers, and prizes won by Mrs. D. Coates, Mrs. S. Cairns and Miss L. Kirby.

STANSTEAD: Ayers Cliff sent gifts for the kitchen to Maplemount Home; Chinese auction held with each member bringing a wrapped gift; Bronze Centennial Medals purchased to present to school children for prizes; canvassed for the blind; patterns for Christmas Stockings given to members to make up and fill. **Hatley:** each member told what they would particularly like to see at Expo; will take part in WI Handicraft exhibit at Fall County Fair. **Hatley Center:** gave safety hints in the home; donated to Cancer Society and to Maplemount Home; sold a special cake made by a member Convener of Health, Mrs. Thwaites read interesting paper on Dieting, and one on Emergency Aid in case of electric shock. **Stanstead North** sent Sunshine basket to member Mrs. L. Whitehouse who has been ill; Mr. E. Struthers, Mayor of Stanstead, was guest, speaking on Canada's Centennial and Expo '67; Mrs. D. Johnston, Convener agriculture read paper on Canadian farming, and Man the Provider; Mrs. M. Osborne, Citizenship Convener read five selections from McLean's Magazine; Mrs. W. Curtis shared a letter from her parents now on tour in Africa; lovely scrapbooks made by Mrs. Whitehouse sent to children in hospital.

VAUDREUIL: Cavagnal: discussion held on Centennial celebrations; thank-you letters read from recipients of Christmas gifts; will plant a tree in Thompson Park as part of Centennial project; for roll call, read a WI News Item. **Harwood:** enjoyed seeing slides taken by Mrs. Prinn on a recent trip to Europe; for roll call, brought a school girl picture with contest then held in guessing who was who in bygone days; cancer dressings to be brought to next meeting; also homemade candy, cookies, cigarettes and playing cards to be delivered to Veterans' Hospital at Ste. Anne's

THE BETTER IMPULSE

FROM THE OFFICE

No more orders accepted for Expo tickets

Convenors of Welfare & Health:

Excellent material for your monthly program may be obtained from two leaflets "Partners in Health" and "Progress Report on Health". The second is printed by the Royal Bank of Canada, but both may be obtained in quantity by writing:

*Health League of Canada,
111 Avenue Road,
Toronto 5, Ont.*

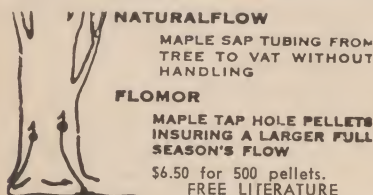
Correction:

The ancient stove pictured in the January issue was donated by the Abercorn WI and not by Mr. and Mrs. Sherrer.

Mrs. W. B. Schroder is the new editor of The Countrywoman. She is very anxious to increase the circulation of this excellent magazine and we certainly highly recommend it to all WI members. It is only \$1.00 a year and to get it all you have to do is to slip a dollar in an envelope and mail it to:

*The Countrywoman,
17 Old Court Place,
40 Kensington High St.,
London W. 8,
England.*

Another purchase which will help out ACWW funds is the ACWW Irish linen dish towel. It is a map of the world in green on a white background with all the countries where ACWW societies are in a darker green. This may also be received by slipping a dollar in an envelope to the above address. It is a nice wall decoration, besides being a conversation piece.



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